LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF INFORMATION TECHNOLOGY
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM	**:**	B. Tech., II-Sem., IT-A
ACADEMIC YEAR	**:**	2022-2023
COURSE NAME & CODE	**:**	APPLIED PHYSICS LAB & 20 FE 54
L-T-P STRUCTURE	**:**	0-0-3
COURSE CREDITS	**:**	1
COURSE INSTRUCTOR	**:**	**Dr. S. YUSUB**
COURSE COORDINATOR	**:**	**Dr. S. YUSUB**

Course Educational Objective:

The theoretical ideas, Analytical techniques, graphical analysis and concepts covered in the lecture by completing a host of experiments with the procedures and observational skills for appropriate use of simple and complex apparatus.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Analyze the wave characteristics of light.
CO2: Estimate the magnetic field using Stewart's and Gee's apparatus.
CO3: Verify the characteristics of semi conductor diodes.
CO4: Determine the acceptance angle and numerical aperture of optical fiber.
CO5: Improve report writing skills and individual team work with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos & POs, PSOs):

Applied Physics Lab												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**1**	**1**								**1**
CO2.	**3**	**3**	**1**	**1**								**1**

CO3.	**3**	**3**	**1**	**1**								**1**
CO4.	**3**	**3**	**1**	**1**								**1**
CO5.								**2**	2	**2**		
1 = slight (Low)		**2 = Moderate (Medium)**						**3 = Substantial (High)**				

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:
1. Lab Manual Prepared by the LBRCE.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section- EEE-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction	3	21-05-2021	21-05-2021	**TLM4**	1,2,3,4	T1	
2.	Demonstration	3	28-05-2021	28-05-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
3.	Experiment 1	3	04-06-2021	04-06-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
4.	Experiment 2	3	11-06-2021	11-06-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
5.	Experiment 3	3	18-06-2021	18-06-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
6.	Experiment 4	3	25-06-2021	25-06-2021	**TLM4**	CO1, CO2, CO3, CO4	T1	
7.	Experiment 5	3	02-07-2021	02-07-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
8.	Demonstration	3	09-07-2021	09-07-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
9.	Experiment 6	3	16-07-2021	16-07-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
10.	Experiment 7	3	23-07-2021	23-07-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
11.	Experiment 8	3	30-07-2021	30-07-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	

12.	Experiment 16	3	06-08-2021	06-08-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
13.	Experiment 10	3	13-08-2021	13-08-2021	**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
14.	**Internal Exam**	3	20-08-2021		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
15.	**Internal Exam**	3	27-08-2021		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
No. of classes required to complete UNIT-I		45			No. of classes taken:			

EVALUATION PROCESS:

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8	A=5
Internal test = **B**	1,2,3,4,5,6,7,8	B=5
Evaluation of viva voce = **C**	1,2,3,4,5,6,7,8	C = 5
Evaluation of attendance Marks = **D**	1,2,3,4,5,6,7,8	D = 0
Cumulative Internal Examination : A + B + C + D = 15	1,2,3,4,5,6,7,8	**15**
Semester End Examinations = E	1,2,3,4,5,6,7,8	**E = 35**
Total Marks: A + B + C + D + E = 50	1,2,3,4,5,6,7,8	**50**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1.To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.
2. To Function professionally in the rapidly changing world with advances in technology.
3. To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.
4. To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner .

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

(1). **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

(2). **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

(3). Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration

for the public health and safety, and the cultural, societal, and environmental considerations.

(4). Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

(5). Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with anunderstanding of the limitations.

(6). The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

(7).Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need forsustainable development.

(8). Ethics: Apply ethical principles and commit to professional ethics and responsibilities and normsof the engineering practice.

(9). Individual and team work: Function effectively as an individual, and as a member or leader indiverse teams, and in multidisciplinary settings.

(10). Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

(11). Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leaderin a team, to manage projects and in multidisciplinary environments.

(12).Life-long learning: Recognize the need for, and have the preparation and ability to engage inindependent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the ECE will have the ability to

(1) Design and develop modern communication technologies for building the inter disciplinary skillsto meet current and future needs of industry.

(2) Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real timeapplications in the field of VLSI and Embedded Systems using relevant tools

(3) Apply the Signal processing techniques to synthesize and realize the issues related to real timeapplications.

Dr. S. YUSUB / N. ARUNA	Dr. S. YUSUB	Dr. S. YUSUB	Dr A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

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COURSE HANDOUT

Part-A

PROGRAM : B. Tech., II-Sem., IT-A

ACADEMIC YEAR : 2022-2023

COURSE NAME & CODE : Applied Physics-20FE07

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS 3

COURSE INSTRUCTOR : **Dr. S. YUSUB**

COURSE COORDINATOR : **Dr. S. YUSUB**

COURSE EDUCATIONAL OBJECTIVES(CEOs) : The basic concepts of Optics such as Interference, Diffraction, Lasers and Optical Fibers. The principle of quantum mechanics, free electron theory of metals, Concept of semi conductors, different types of polarizations in dielectrics and their applications.

Course Outcomes: At the end of the course, the student will be able to:

CO1: Define the nature of interference and diffraction.
CO2: Apply the lasers and optical fibres in different fields.
CO3: Estimate the electrical conductivity of metals.
CO4: Analyze the properties of semiconducting materials.
CO5: Classify the different types of magnetic and dielectric materials.

COURSE ARTICULATION MATRIX (Correlation between COs& POs, PSOs):

APPLIED PHYSICS												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**1**	**1**	1	1	1					**1**
CO2.	**3**	**3**	2	**1**	1	1	1					**1**
CO3.	**3**	**3**	**1**	**1**	1	1	1					**1**
CO4.	**3**	**3**	**1**	**1**	1	1	1					**1**
CO5.	**3**	**3**	**1**	**1**	1	1	1					**1**
1 = slight (Low)	**2 = Moderate (Medium)**						**3 = Substantial (High)**					

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

TEXT BOOKS

1. V. Rajendran, "*Engineering Physics*", TMH, New Delhi, 6th Edition, 2014.
2. M.N. Avadhanulu, P.G. Kshirsagar, "Engineering *Physics*", S. Chand & Co., 2nd Edition, 2014.

REFERENCES

1. M.N. Avadhanulu, TVS Arun Murthy, "Applied *Physics*", S. Chand & Co., 2nd Edition, 2007.
2. P.K. Palani Samy, "*Applied Physics*", Sci. Publ. Chennai, 4th Edition, 2016.
3. P. Sreenivasa Rao, K Muralidhar, "*Applied Physics*", Him. Publi. Mumbai, 1st Edition, 2016.
4. Hitendra K Mallik , AK Singh " *Engineering Physics*", TMH, New Delhi, 1st Edition, 2009.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): EEE-A

UNIT-I : Interference and diffraction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes Principle of superposition	1	13-05-2021		TLM1	CO1	T1	
2.	Coherence Conditions for interferen	1	15-05-2021		TLM1	CO1	T1	
3.	Interference in thin films	1	17-05-2021		TLM1	CO1	T1	
4.	Newton's rings	1	19-05-2021		TLM1	CO1	T1	
5.	Michelson interferometer	1	20-05-2021		TLM1	CO1	T1	
6.	Fraunhofer diffraction Single slit	1	24-05-2021		TLM1	CO1	T1	
7.	Circular aperture	1	26-05-2021		TLM1	CO1	T1	
8.	Diffraction Grating, Resolving power of Grating	1	27-05-2021		TLM1	CO1	T1	
9.	Tutorial-2 Assignment/Quiz	1	29-05-2021		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		10			No. of classes taken: 10			

UNIT-II : LASERS AND OPTICAL FIBERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly

10.	Principle of laser, Characteristics of Laser.	1	02-06-2021		TLM1	CO2	T1	
11.	Einstein's coefficients	1	03-06-2021		TLM1	CO2	T1	
12.	NdYAG laser	1	05-06-2021		TLM1	CO2	T1	
13.	He-Ne laser	1	07-06-2021		TLM1	CO2	T1	
14.	Applications of lasers	1	09-06-2021		TLM1	CO2	T1	
15.	Optical Fiber principle	1	10-06-2021		TLM1	CO2	T1	
16.	Structure of optical fiber	1	12-06-2021		TLM1	CO2	T1	
17.	Numerical Aperture and Acceptance angle	1	14-06-2021		TLM1	CO2	T1	
18.	Types of optical fibers	1	16-06-2021		TLM1	CO2	T1	
19.	Applications,	1	17-06-2021		TLM1	CO2	T1	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

UNIT-III : PRINCIPLES OF QUANTUM MECHANICS & FREE ELECTRON THEORY

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20	Introduction to Unit III, de-Broglie hypothesis	1	**19-06-2021**		TLM1	CO3	T1	
21	Davisson–Germer Experiment	1	21-06-2021		TLM1	CO3	T1	
22	Schrodinger wave equation,	1	**22-06-2021**		TLM1	CO3	T1	
23	physical significance of the wave function	1	23-06-2021		TLM1	CO3	T1	
24	particle in a box	1	24-06-2021		TLM1	CO3	T1	
25	particle in a box	1	26-06-2021		TLM1	CO3	T1	
26	Revision	1	28-06-2021		TLM1	CO1	T1	
27	Revision	1	30-06-2021		TLM1	CO2	T1	
28	Revision	1	01-07-2021		TLM1	CO2	T1	
29	**I MID**		02-07-2021			CO1, CO2,		

						CO3		
30	**I MID**		03-07-2021			CO1, CO2, CO3		
31	**I MID**		05-07-2021			CO1, CO2, CO3		
32	**I MID**		06-07-2021			CO1, CO2, CO3		
33	**I MID**		07-07-2021			CO1, CO2, CO3		
34	Classical free electron theory- Postulates, Expression for electrical conductivity and drift velocity,	1	08-07-2021		TLM1	CO3	T1	
35	Advantages and Draw backs,	1	09-07-2021		TLM1	CO3	T1	
36	Fermi-Dirac statistics,	1	10-07-2021		TLM1	CO3	T1	
37	Classification of Solids on the basis of Band theory. Assignment/Quiz	1	12-07-2021		TLM1	CO3	T1	
No. of classes required to complete UNIT-III		15			No. of classes taken: 15			

UNIT-IV: SEMI CONDUCTOR PHYSICS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
38.	Introduction to unit IV, Semiconductors	1	14-07-2021		TLM1	CO4	T1	
39.	Carrier concentration in n-type semiconductor		15-07-2021		TLM1	CO4	T1	
40.	Conductivity of intrinsic semiconductor	1	17-07-2021		TLM1	CO4	T1	
41.	Carrier concentration in p-type semiconductor,	1	19-07-2021		TLM1	CO4	T1	
42.	Conductivity of extrinsic semiconductor	1	22-07-2021		TLM1	CO4	T1	
43.	Drift and diffusion Einstein relation,	1	24-07-2021		TLM1	CO4	T1	

44.	Hall effect,	1	26-07-2021		TLM1	CO4	T1	
45.	Solar cell,	1	28-07-2021		TLM1	CO4	T1	
46.	Applications of solar cells,	1	29-07-2021		TLM1	CO4	T1	
47.	Direct and indirect band gap semiconductors	1	31-07-2021		TLM1	CO4	T1	
48.	Assignment/Quiz	1	02-08-2021		TLM6	CO4	T1	
No. of classes required to complete UNIT-IV		14			No. of classes taken: 14			

UNIT-V : MAGNETIC AND DIELECTRIC MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Magnetic parameters, Classification of magnetic materials Diamagnetic, paramagnetic and ferromagnetic materials	1	04-08-2021		TLM1	CO5	T1	
50.	Hysteresis, soft and hard magnetic materials,	1	05-08-2021		TLM1	CO5	T1	
51.	Applications of Ferro magnetic materials	1	07-08-2021		TLM1	CO5	T1	
52.	Electronic polarization Ionic polarization, Orientation polarization	1	09-08-2021		TLM1	CO5	T1	
53.	Local field, Clausius-Mossitti relation	1	11-08-2021		TLM1	CO5	T1	
54.	Applications of dielectric materials, Assignment/Quiz	1	12-08-2021		TLM1	CO5	T1	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
55.	SEM	1	14-08-2021		TLM1		R1	
56.	Nano materials	1	14-08-2021		TLM1		R1	
75	Mid II	1	16-08-2021			CO3, CO4, CO5		

76	Mid II	1	18-08-2021			CO3, CO4, CO5		
77	Mid II	1	20-08-2021			CO3, CO4, CO5		
78	Mid II	1	21-08-2021			CO3, CO4, CO5		
79	Mid II	1	23-08-2021			CO3, CO4, CO5		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=15
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=10
II-Mid Examination	3,4,5	B2=15
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=15
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=30**
Semester End Examinations	**1,2,3,4,5**	**C=70**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates of Information Technology programme will be:

PEO 1: Pursue a successful career in the area of Information Technology or its allied fields.

PEO 2: Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.

PEO 3: Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.

PEO 4: Able to understand the professional code of ethics and demonstrate ethical behaviour, effective communication, team work and leadership skills in their job.

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solution sin societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the Information Technology will have the ability to

1.Organize, Analyze and Interpret the data to extract meaningful conclusions.
2.Design, Implement and Evaluate a computer-based system to meet desired needs.
3. Develop IT application services with the help of different current engineering tools.

Dr. S. YUSUB	Dr. S. YUSUB	Dr. S. YUSUB	Dr. A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. L.Srinivas
Course Name & Code : CONSTITUTION OF INDIA (20MC01)
L-T-P Structure : 2-0-0 Credits: 0
Program/Sem/Sec : B.Tech (IT), II-Sem., Sec - A A.Y: 2020-21

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive, Legislature and Judiciary
- To understand philosophy of fundamental rights and duties
- To understand the autonomous nature of constitution bodies like Supreme Court, High Court, Comptroller & Auditor General of India and Election Commission of India
- To understand the Centre-State financial and administrative relations

COURSE OUTCOMES (COs): At the end of the course, the students will be able to:

CO1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO3	Understand the structure of the state government, Secretariat, Governor and Chief Minister andtheir functions.
CO4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO5	Learn about Election Commision and the process and about SC,ST,OBC and women.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

1) Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020. NewDelhi
2) Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

1) Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of IndiaPvt.Ltd., New Delhi.
2) Subash Kashyap, Indian Constitution, National Book Trust.
3) J.A. Siwach, Dynamics of Indian Government and Politics.
4) D.C. Gupta, Indian Government and Politics.
5) H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal LawPublication).
6) J.C. Johari, Indian Government and Politics Hans.
7) J.Raj, Indian Government and Politics.
8) M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice –Hall of India Pvt. Ltd., New Delhi.
9) Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E-RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
1.	Introduction class	1	15-5-2021		TLM2	CO1	
2.	COI: Meaning	1	18-5-2021		TLM2	CO1	
3.	COI: Sources	1	22-5-2021		TLM2	CO1	
4.	Constitutional History	1	25-5-2021		TLM2	CO1	
5.	Preamble, Citizenship	1	29-5-2021		TLM2	CO1	
6.	Fundamental Rights and Duties	1	01-6-2021		TLM2	CO1	
7.	Directive Principles	1	05-6-2021		TLM6	CO1	
No. of classes required to complete UNIT-I		7		No. of classes taken:			

UNIT-II : Union Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
8.	Union Government and its administration, Structure of Indian Union	1	08-6-2021		TLM2	CO2	
9.	Centre-State relation	1	12-6-2021		TLM2	CO2	
10.	Centre-State relation	1	15-6-2021		TLM2	CO2	
11.	President's Role	1	19-6-2021		TLM2	CO2	
12.	President's Role	1	22-6-2021		TLM2	CO2	
13.	PM and CoM, Cabinet and Central Secretariat	1	26-6-2021		TLM2	CO2	
14.	Lok Sabha & Rajya Sabha	1	29-6-2021		TLM2	CO2	
15.	Supreme Court of India	1	03-7-2021		TLM2	CO2	
16.	General discussion	1	05-7-2021		TLM2	CO2	
17.	High Court: Powers and Functions	1	13-7-2021		TLM2	CO2	
No. of classes required to complete UNIT-II		10		No. of classes taken:			

UNIT-III : State Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
18.	Governor's role and Position	1	10-8-2021		TLM2	CO3	
19.	CM and CoM	1	14-8-2021		TLM2	CO3	
20.	State Secretariat: Organization, Structure and Functions.	1	17-8-2021		TLM2	CO3	
No. of classes required to complete UNIT-III		3		No. of classes taken:			

UNIT-IV: Local Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
21.	Local Admin - Role and Importance, Municipalities – Mayor and Councilors	1	21-8-2021		TLM2	CO4	
22.	Panchayati Raj: Functions Zilla Panchayat: Elected Officials and their roles	1	24-8-2021		TLM2	CO4	
23.	Village level –Elected and appointed officials.	1	28-8-2021		TLM2	CO4	
No. of classes required to complete UNIT-IV		3		No. of classes taken:			

UNIT-V: Commissions

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
24.	Election Commission – Role of Chief Election Commissioner	1	31-8-2021		TLM2	CO5	
25.	State Election Commission: Functions	1	01-9-2021		TLM2	CO5	
26.	Commission for the welfare of SC	1	04-9-2021		TLM2	CO5	
27.	Commission for the welfare of ST	1	07-9-2021		TLM2	CO5	
28.	Commission for the welfare of OBC	1	11-9-2021		TLM2	CO5	
29	Commission for the welfare of Women	1	14-9-2021		TLM2	CO5	
No. of classes required to complete UNIT-V		6		No. of classes taken:			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial/ Assignment	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1 =5
I-Descriptive Examination (Units-I, II & III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2 =5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs
PSO 3	Develop IT application services with the help ofdifferent currentengineering tools.

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. L.Srinivas)	(Dr.L.Srinivas)	(Dr.D.Veeraiah)	(Dr.A.Adisesha Reddy)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. L.Srinivas
Course Name & Code : CONSTITUTION OF INDIA (20MC01)
L-T-P Structure : 2-0-0 Credits: 0
Program/Sem/Sec : B.Tech (IT), II-Sem., Sec - A A.Y: 2020-21

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive, Legislature and Judiciary
- To understand philosophy of fundamental rights and duties
- To understand the autonomous nature of constitution bodies like Supreme Court, High Court, Comptroller & Auditor General of India and Election Commission of India
- To understand the Centre-State financial and administrative relations

COURSE OUTCOMES (COs): At the end of the course, the students will be able to:

CO1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO3	Understand the structure of the state government, Secretariat, Governor and Chief Minister andtheir functions.
CO4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO5	Learn about Election Commision and the process and about SC,ST,OBC and women.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

1) Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020. NewDelhi
2) Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

1) Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of IndiaPvt.Ltd., New Delhi.
2) Subash Kashyap, Indian Constitution, National Book Trust.
3) J.A. Siwach, Dynamics of Indian Government and Politics.
4) D.C. Gupta, Indian Government and Politics.
5) H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal LawPublication).
6) J.C. Johari, Indian Government and Politics Hans.
7) J.Raj, Indian Government and Politics.
8) M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice –Hall of India Pvt. Ltd., New Delhi.
9) Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E-RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
1.	Introduction class	1	15-5-2021		TLM2	CO1	
2.	COI: Meaning	1	18-5-2021		TLM2	CO1	
3.	COI: Sources	1	22-5-2021		TLM2	CO1	
4.	Constitutional History	1	25-5-2021		TLM2	CO1	
5.	Preamble, Citizenship	1	29-5-2021		TLM2	CO1	
6.	Fundamental Rights and Duties	1	01-6-2021		TLM2	CO1	
7.	Directive Principles	1	05-6-2021		TLM6	CO1	
No. of classes required to complete UNIT-I		7		No. of classes taken:			

UNIT-II : Union Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
8.	Union Government and its administration, Structure of Indian Union	1	08-6-2021		TLM2	CO2	
9.	Centre-State relation	1	12-6-2021		TLM2	CO2	
10.	Centre-State relation	1	15-6-2021		TLM2	CO2	
11.	President's Role	1	19-6-2021		TLM2	CO2	
12.	President's Role	1	22-6-2021		TLM2	CO2	
13.	PM and CoM, Cabinet and Central Secretariat	1	26-6-2021		TLM2	CO2	
14.	Lok Sabha & Rajya Sabha	1	29-6-2021		TLM2	CO2	
15.	Supreme Court of India	1	03-7-2021		TLM2	CO2	
16.	General discussion	1	05-7-2021		TLM2	CO2	
17.	High Court: Powers and Functions	1	13-7-2021		TLM2	CO2	
No. of classes required to complete UNIT-II		10		No. of classes taken:			

UNIT-III : State Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
18.	Governor's role and Position	1	10-8-2021		TLM2	CO3	
19.	CM and CoM	1	14-8-2021		TLM2	CO3	
20.	State Secretariat: Organization, Structure and Functions.	1	17-8-2021		TLM2	CO3	
No. of classes required to complete UNIT-III		3		No. of classes taken:			

UNIT-IV: Local Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
21.	Local Admin - Role and Importance, Municipalities – Mayor and Councilors	1	21-8-2021		TLM2	CO4	
22.	Panchayati Raj: Functions Zilla Panchayat: Elected Officials and their roles	1	24-8-2021		TLM2	CO4	
23.	Village level –Elected and appointed officials.	1	28-8-2021		TLM2	CO4	
No. of classes required to complete UNIT-IV		3		No. of classes taken:			

UNIT-V: Commissions

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	CO	HOD Sign Weekly
24.	Election Commission – Role of Chief Election Commissioner	1	31-8-2021		TLM2	CO5	
25.	State Election Commission: Functions	1	01-9-2021		TLM2	CO5	
26.	Commission for the welfare of SC	1	04-9-2021		TLM2	CO5	
27.	Commission for the welfare of ST	1	07-9-2021		TLM2	CO5	
28.	Commission for the welfare of OBC	1	11-9-2021		TLM2	CO5	
29	Commission for the welfare of Women	1	14-9-2021		TLM2	CO5	
No. of classes required to complete UNIT-V		6		No. of classes taken:			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial/ Assignment	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1 =5
I-Descriptive Examination (Units-I, II & III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2 =5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs):

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs
PSO 3	Develop IT application services with the help ofdifferent currentengineering tools.

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. L.Srinivas)	(Dr.L.Srinivas)	(Dr.D.Veeraiah)	(Dr.A.Adisesha Reddy)

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF INFORMATION TECHNOLOGY

PART-A

Name of Course Instructor : **V V KRISHNA REDDY**
Course Name & Code : CONSTITUTION OF INDIA (20MC01)

L-T-P Structure : 2-0-0 Credits : 0
Program/Sem/Sec : B.Tech., IT., II-Sem., B A.Y: 2021-22

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive ,Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commision of India
- To Understand the Central and State relation, financial and administrative.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commision and the process and about SC,ST,OBC and women.

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi

T2 Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

R1 Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.

R2 Subash Kashyap, Indian Constitution, National Book Trust.

R3 J.A. Siwach, Dynamics of Indian Government and Politics.

R4 D.C. Gupta, Indian Government and Politics.

R5 H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).

R6 J.C. Johari, Indian Government and Politics Hans.

R7 J.Raj, Indian Government and Politics.

R8 M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.

R9Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section C

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction and Co-Po and Syllabus	1	04-05-2022		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	06-05-2022		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	11-05-2022		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	13-05-2022		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	18-05-2022		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	20-05-2022		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	25-05-2022		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I		**7**			**No. of classes taken:**			

UNIT-II: Union Government and its Administration Structure of the Indian Union

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Union Government structure in India	1	27-05-2022		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	01-06-2022		TLM2	CO2	T1 / T2	
10	State Relationships to the Union	1	03-06-2022		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	08-06-2022		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers ,cabinet and Central Secretariat Powers and duties	1	10-06-2022		TLM2	CO2	T1 / T2	
13	Lok Sabha,Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	15-06-2022		TLM2	CO2	T1 / T2	
14	Assignment II	1	17-06-2022		TLM7	CO2	T1 / T2	
I MID EXAMINATIONS 20-06-2022 to 25-06-2022								
		7			**No. of classes taken:**			

UNIT-III: State Government and its administration Governor

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	State Government and its Administration Governor and Role	1	29-06-2022		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	01-07-2022		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	06-07-2022		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	08-07-2022		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment –III	1	13-07-2022		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III		**05**			**No. of classes taken:**			

UNIT-IV: A Local Administration

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20	A Local Administration	1	15-07-2022		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	20-07-2022		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities –Mayor and Role of Elected Representative	1	22-07-2022		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	27-07-2022		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	29-07-2022		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		**05**			**No. of classes taken:**			

UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25	Election Commission :Role of Chief Election Commissioner and Election Commisionerate	1	03-08-2022		TLM2 / TLM4	CO5	T1 / T2	
26	State Election Commission	1	05-08-2022		TLM2 / TLM4	CO5	T1 / T2	
27	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	10-08-2022		TLM2 / TLM4	CO5	T1 / T2	
No. of classes required to complete UNIT-V		**03**			**No. of classes taken:**			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
29.	Consumer Rights Industrial policies	1	12-08-2022		TLM2/ TLM5		T2/R3	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I , Unit-II , Unit-III)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=15
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Organize, Analyze and Interpret the data to extract meaningful conclusions.
2. Design, Implement and evaluate a computer-based system to meet desired needs.
3. Develop IT application services with the help of different current engineering tools.

Course Instructor	Module Coordinator	HOD
V.V. Krishna Reddy	**Dr. D. Veeraiah**	**Dr. B. Srinivasa Rao**

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF INFORMATION TECHNOLOGY

PART-A

Name of Course Instructor : **V V KRISHNA REDDY**
Course Name & Code : CONSTITUTION OF INDIA (20MC01)

L-T-P Structure : 2-0-0 Credits : 0
Program/Sem/Sec : B.Tech., IT., II-Sem., A A.Y: 2021-22

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive ,Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commision of India
- To Understand the Central and State relation, financial and administrative.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commision and the process and about SC,ST,OBC and women.

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

T1 Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi

T2 Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

R1 Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.

R2 Subash Kashyap, Indian Constitution, National Book Trust.

R3 J.A. Siwach, Dynamics of Indian Government and Politics.

R4 D.C. Gupta, Indian Government and Politics.

R5 H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).

R6 J.C. Johari, Indian Government and Politics Hans.

R7 J.Raj, Indian Government and Politics.

R8 M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.

R9Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section C

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction and Co-Po and Syllabus	1	05-05-2022		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	10-05-2022		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	12-05-2022		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	17-05-2022		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	19-05-2022		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	24-05-2022		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	26-05-2022		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I		**7**			**No. of classes taken:**			

UNIT-II: Union Government and its Administration Structure of the Indian Union

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Union Government structure in India	1	31-05-2022		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	02-06-2022		TLM2	CO2	T1 / T2	
10	State Relationships to the Union	1	07-06-2022		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	09-06-2022		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers ,cabinet and Central Secretariat Powers and duties	1	14-06-2022		TLM2	CO2	T1 / T2	
13	Lok Sabha,Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	16-06-2022		TLM2	CO2	T1 / T2	
14	Assignment II	1	16-06-2022		TLM7	CO2	T1 / T2	
I MID EXAMINATIONS 20-06-2022 to 25-06-2022								
		6			**No. of classes taken:**			

UNIT-III: State Government and its administration Governor

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	State Government and its Administration Governor and Role	1	28-06-2022		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	30-06-2022		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	05-07-2022		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	07-07-2022		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment –III	1	12-07-2022		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III		**05**			**No. of classes taken:**			

UNIT-IV: A Local Administration

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20	A Local Administration	1	14-07-2022		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	19-07-2022		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities –Mayor and Role of Elected Representative	1	21-07-2022		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	26-07-2022		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	28-07-2022		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		**05**			**No. of classes taken:**			

UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25	Election Commission :Role of Chief Election Commissioner and Election Commisionerate	1	02-08-2022		TLM2 / TLM4	CO5	T1 / T2	
26	State Election Commission	1	04-08-2022		TLM2 / TLM4	CO5	T1 / T2	
27	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	09-08-2022		TLM2 / TLM4	CO5	T1 / T2	
No. of classes required to complete UNIT-V		**03**			**No. of classes taken:**			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
29.	Consumer Rights Industrial policies	1	11.08.2022		TLM2/ TLM5		T2/R3	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I , Unit-II , Unit-III)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=15
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Organize, Analyze and Interpret the data to extract meaningful conclusions.
2. Design, Implement and evaluate a computer-based system to meet desired needs.
3. Develop IT application services with the help of different current engineering tools.

Course Instructor	Module Coordinator	HOD
V.V. Krishna Reddy	**Dr. D. Veeraiah**	**Dr. B. Srinivasa Rao**

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(AUTONOMOUS)

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : D.VijayaSri
Course Name & Code : DATA STRUCTURES LAB & 20CS53
L-T-P Structure : 0-0-3 **Credits:** 1.5
Program/Sem/Sec : B.Tech/II/A-Sec. **A.Y.:** 2022-23

PREREQUISITE: C Programming Language

COURSE OBJECTIVE:

The objective of this course is to make students familiar with writing algorithms to implement different data structures like stacks, queues, trees and graphs, and various sorting techniques

COURSE OUTCOMES (CO):

CO1: Implement Linear Data Structures using array and Linked list. (**Apply - L3**)
CO2: Implement Various Sorting Techniques. (**Apply - L3**)
CO3: : Implement Non-Linear Data Structure such as Trees &Graphs. (**Apply - L3**)
CO4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos, Pos & PSOs):

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1		2	1		1										
CO2		2	1		1										
CO3		2	1		1										
CO4								2	2	2					

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

PART-B:

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign
1.	Introduction & List using Arrays	3	04-05-2022		**TLM5**	
2.	Linked List Programs	12	11-05-2022 18-05-2022 25-05-2022 01-06-2022		**TLM5/VLab**	
3.	Stack, Queue Using Arrays, Linked List	6	08-06-2022 15-06-2022		**TLM5**	
4.	Infix to Postfix, Evaluation of Postfix Expression	3	22-06-2022		**TLM5/VLab /code tantra**	
5.	Circular Queue Double Ended Queue	3	29-06-2022		**TLM5**	
6.	Bubble sort Selection sort Insertion sort	3	06-07-2022		**TLM5/VLab**	
7.	Merge sort Quick sort	3	13-07-2022		**TLM5**	
8.	Heap sort Binary Tree	3	20-07-2022		**TLM5**	
9.	Binary Search Tree	3	27-07-2022		**TLM5/VLab**	
10.	BFS,DFS	3	03-08-2022		**TLM5/VLab/code tantra**	
11.	Lab Internal Exam	3	10-08-2022		**TLM5**	

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	To inculcate an ability to analyze, design and implement data driven applications into the students
PSO 3	Develop an ability to implement various processes/methodologies/practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**J.GeethaRenuka**	**J.GeethaRenuka**	**Dr. S. Naganjaneyulu**	**Dr. B. Srinivasa Rao**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC : I B. Tech., II-Sem., IT-B
ACADEMIC YEAR : 2022-23
COURSE NAME & CODE : Linear algebra & Transformation Techniques & 20FE04
L-T-P STRUCTURE : 3-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Dr.K. Bhanu Lakshmi
COURSE COORDINATOR : Dr. K. Jhansi Rani
PRE-REQUISITES : Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the students learn Matrix algebra and introduced with transformation techniques such as Laplace transformation and Z – Transformations.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Investigate the consistency of the system of equations and solve them. (Apply L3)
CO2	Determine the Eigen vectors and inverse, powers of a matrix by using Cayley – Hamilton theorem. (Apply L3)
CO3	Use the concepts of Laplace transforms to various forms of functions.(Understand L2)
CO4	Solve Ordinary differential equations by using Laplace Transformations. (Apply L3)
CO5	Apply Z- Transformations to solve difference equations. (Apply L3)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	2	-	-	-	-	-	-	-	1			
CO2	3	2	-	2	-	-	-	-	-	-	-	1			
CO3	3	2	-	2	-	-	-	-	-	-	-	1			
CO4	2	1	-	1	-	-	-	-	-	-	-	1			
CO5	3	2	-	2	-	-	-	-	-	-	-	1			
1 - Low						**2** –Medium						**3** - High			

TEXTBOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, New Delhi, 2012.

T2 Dr. B. V. Ramana, "Higher Engineering Mathematics", 1st Edition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

R1 M. D. Greenberg, "Advanced Engineering Mathematics", 2nd Edition, TMH Publications, New Delhi, 2011.

R2 Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley & sons, New Delhi, 2011.

R3 W.E. Boyce and R. C. Diprima, " Elementary Differential Equations" , 7th Edition, John Wiley & sons, New Delhi,2011.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	13/03/23		TLM1	

UNIT-I: Linear System of Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
2.	Introduction to UNIT I	1	14/03/23		TLM1	
3.	Matrices and rank of a matrix	1	17/03/23		TLM1	
4.	Echelon form of a matrix	1	18/03/23		TLM1	
5.	Normal form of a matrix	1	20/03/23		TLM1	
6.	Normal form of a matrix	1	21/03/23		TLM1	
7.	PAQ form	1	24/03/23		TLM1	
8.	Solution of Non-homogeneous linear system of equations	1	25/03/23		TLM1	
9.	Solution of Non-homogeneous Linear system of equations	1	27/03/23		TLM1	
10.	Solution of Homogeneous Linear system of equations	1	28/03/23		TLM1	
11.	**Tutorial 1**	1	31/03/23		TLM3	
12.	Solution of Homogeneous Linear system of equations	1	03/04/23		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Eigen values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Introduction to UNIT II	1	04/04/23		TLM1	
14.	Eigen values of a matrix	1	08/04/23		TLM1	
15.	Eigen values and Eigen vectors of a matrix.	1	10/04/23		TLM1	
16.	Eigen values and Eigen vectors of a matrix.	1	11/04/23		TLM1	
17.	Properties	1	15/04/23		TLM1	
18.	Properties		17/04/23			
19.	Cayley – Hamilton Theorem.	1	18/04/23		TLM1	
20.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	20/04/23		TLM1	
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	21/04/23		TLM1	
22.	**Tutorial 2**	1	24/04/23		TLM3	
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III: Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Introduction to Unit-III	1	25/04/23		TLM1	
24.	Standard forms of Laplace Transforms.	1	28/04/23		TLM1	
25.	Linear Property, Shifting Theorem.	1	29/04/23		TLM1	
26.	Change of scale property, Multiplication by t.	1	01/05/23		TLM1	
27.	Change of scale property, Multiplication by	1	02/05/23		TLM1	
28	Multiplication by t.	1	05/05/23		TLM1	

29	Multiplication by t.	1	06/05/23		TLM1	
II MID EXAMINATIONS (08-05-2023 TO 13-05-2023)						
30	Division by t	1	15/05/23		TLM1	
31.	Laplace transforms of derivatives.	1	16/05/23		TLM 1	
32.	Laplace transforms of Integrals.	1	18/05/23		TLM1	
33.	**Tutorial 3**	1	19/05/23		TLM3	
34.	Unit step function and Dirac's delta function.	1	20/05/23		TLM1	
35.	Application of Laplace Transforms.	1	22/05/23		TLM1	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: Inverse Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
36.	Introduction to UNIT IV.	1	23/05/23		TLM1	
37.	Linear property.	1	26/05/23		TLM1	
38.	First Shifting properties.	1	27/05/23		TLM1	
39.	Inverse transforms properties	1	29/05/23		TLM1	
40.	Problems	1	30/05/23		TLM1	
41.	Inverse Laplace transform by using partial fractions.	1	02/06/23		TLM1	
42.	Inverse Laplace transform by using partial fractions.	1	03/06/23		TLM1	
43.	Inverse Laplace Transform by using Convolution theorem.	1	05/06/23		TLM1	
44.	Inverse Laplace Transform by using Convolution theorem.	1	06/06/23		TLM1	
45.	Solving of Ordinary differential equation by Laplace transform method.	1	09/06/23		TLM1	
46.	Solving of Ordinary differential equation by Laplace transform method.	1	12/06/23		TLM1	
47.	**Tutorial 4**	1	13/06/23		TLM3	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Z- Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
48.	Introduction to UNIT V.	1	16/06/23		TLM1	
49.	Standard forms of Z- Transform.	1	17/06/23		TLM1	
50.	Damping rule	1	19/06/23		TLM1	
51.	Shifting Rule	1	20/06/23		TLM1	
52.	Initial and final value theorems.	1	23/06/23		TLM1	
53.	Other properties	1	24/06/23		TLM1	
54.	Inverse Z – Transforms by using partial fractions.	1	26/06/23		TLM1	
55.	Inverse Z – Transform by using convolution theorem.	1	27/06/23		TLM1	
56.	Inverse Z – Transform by using convolution theorem.		30/06/23			
57.	Solving of Difference equations by using Z – Transforms.	1	01/07/23		TLM1	
58.	Solving of Difference equations by using Z – Transforms.	1	03/07/23		TLM1	
59.	**Tutorial 5**	1	04/07/23		TLM3	
No. of classes required to complete UNIT-V: 12				**No. of classes taken:**		

Contents beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly

57.	Solving Simultaneous equations using Laplace Transforms	1	07/07/23		TLM2	

II MID EXAMINATIONS (10-07-2023 TO 15-07-2023)

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. K.Bhanu Lakshmi**	**Dr. K. Jhansi Rani**	**Dr. A. Rami Reddy**	**Dr. A. Rami Reddy**
Signature				